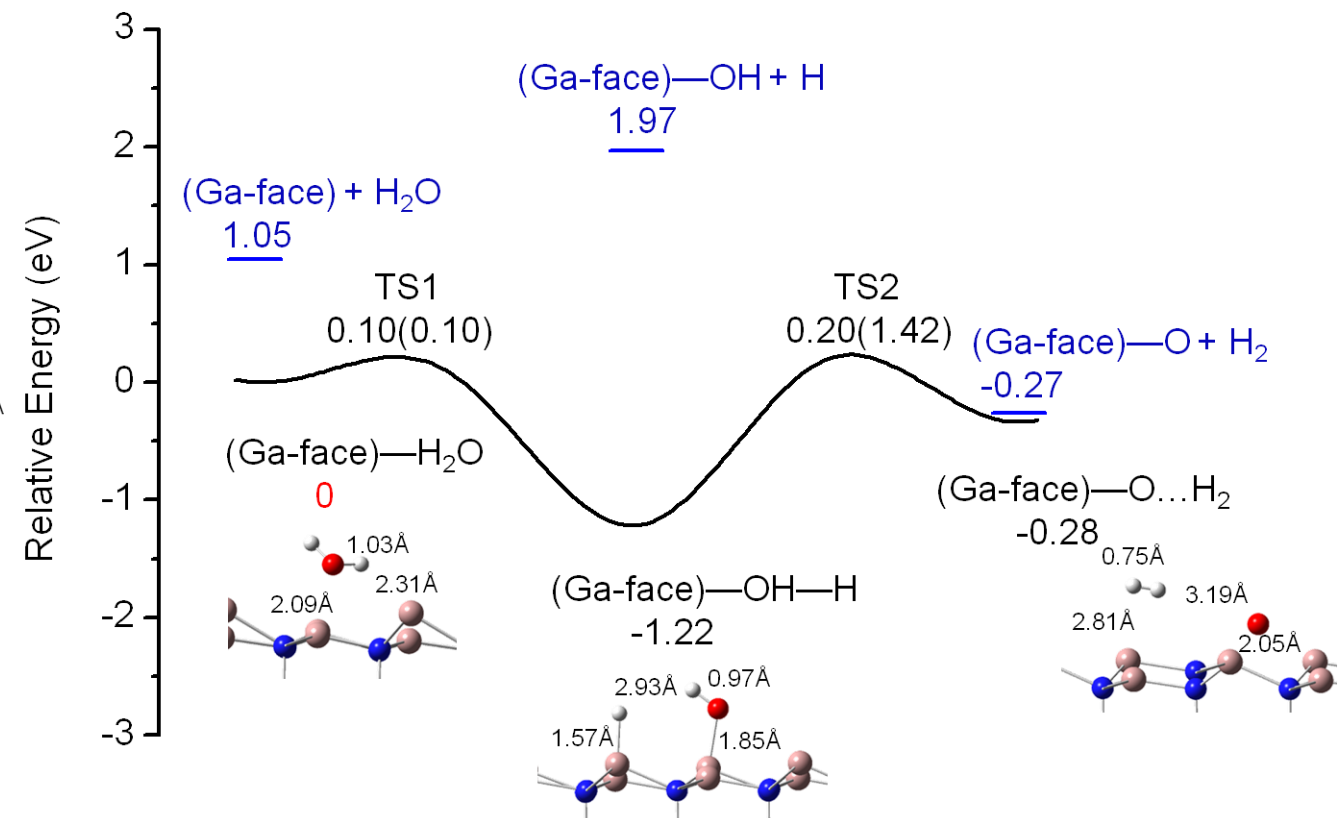
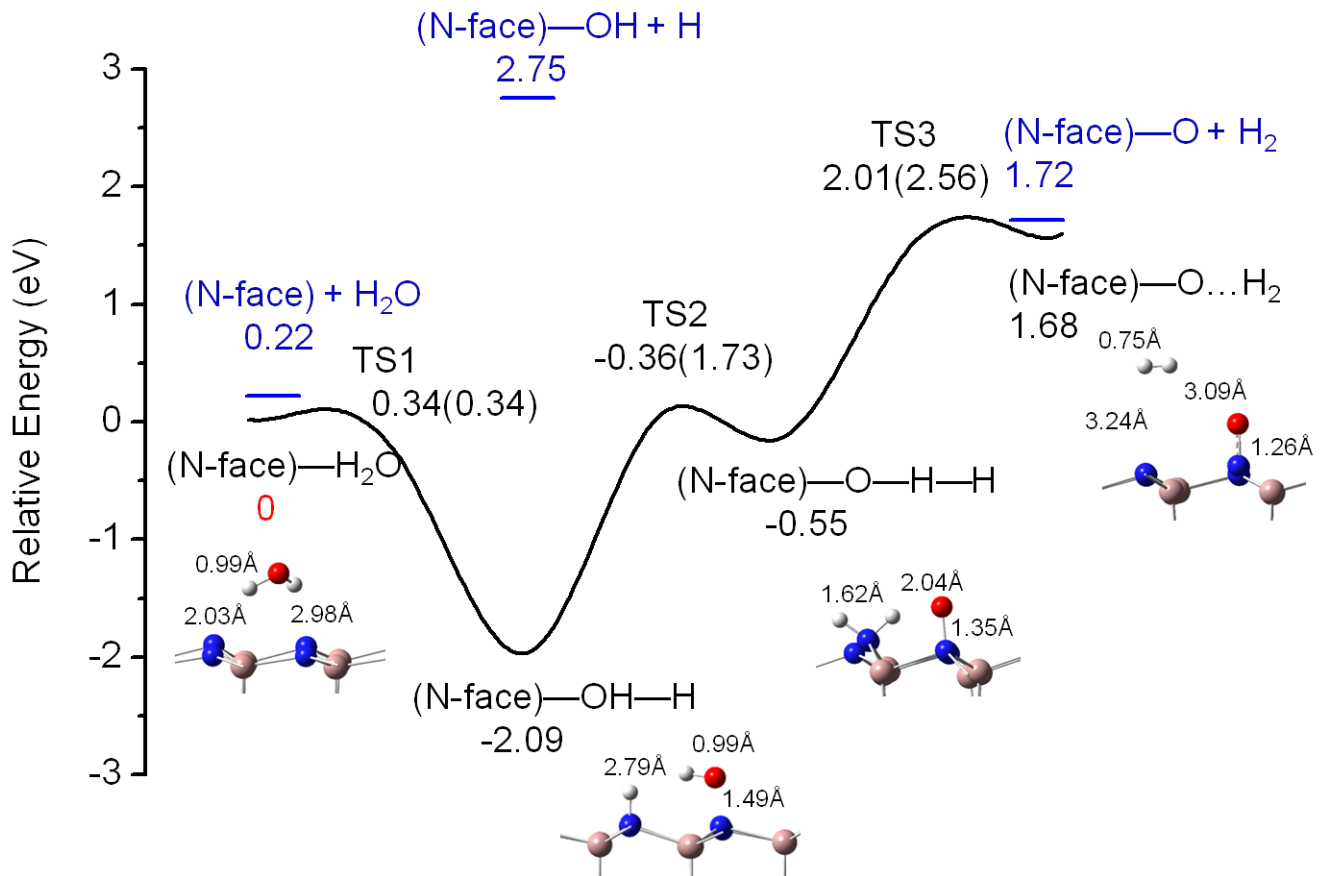
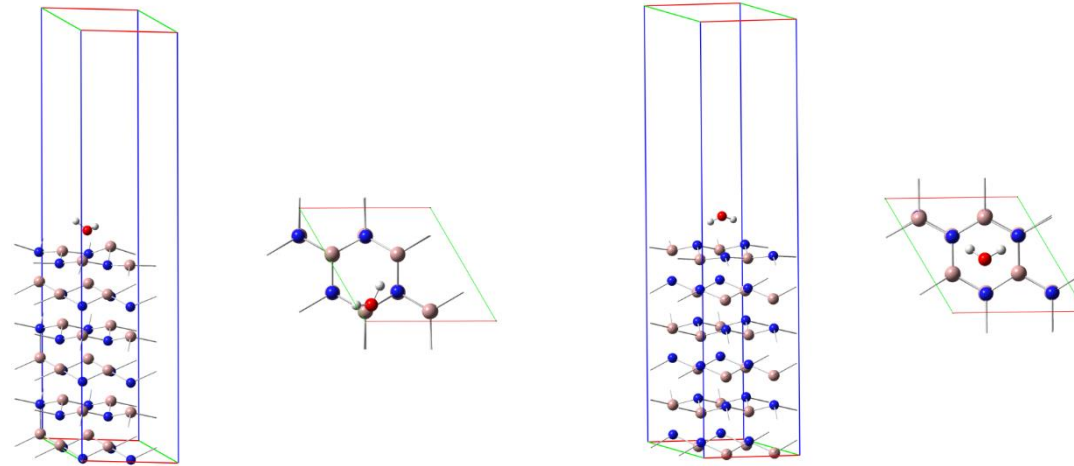
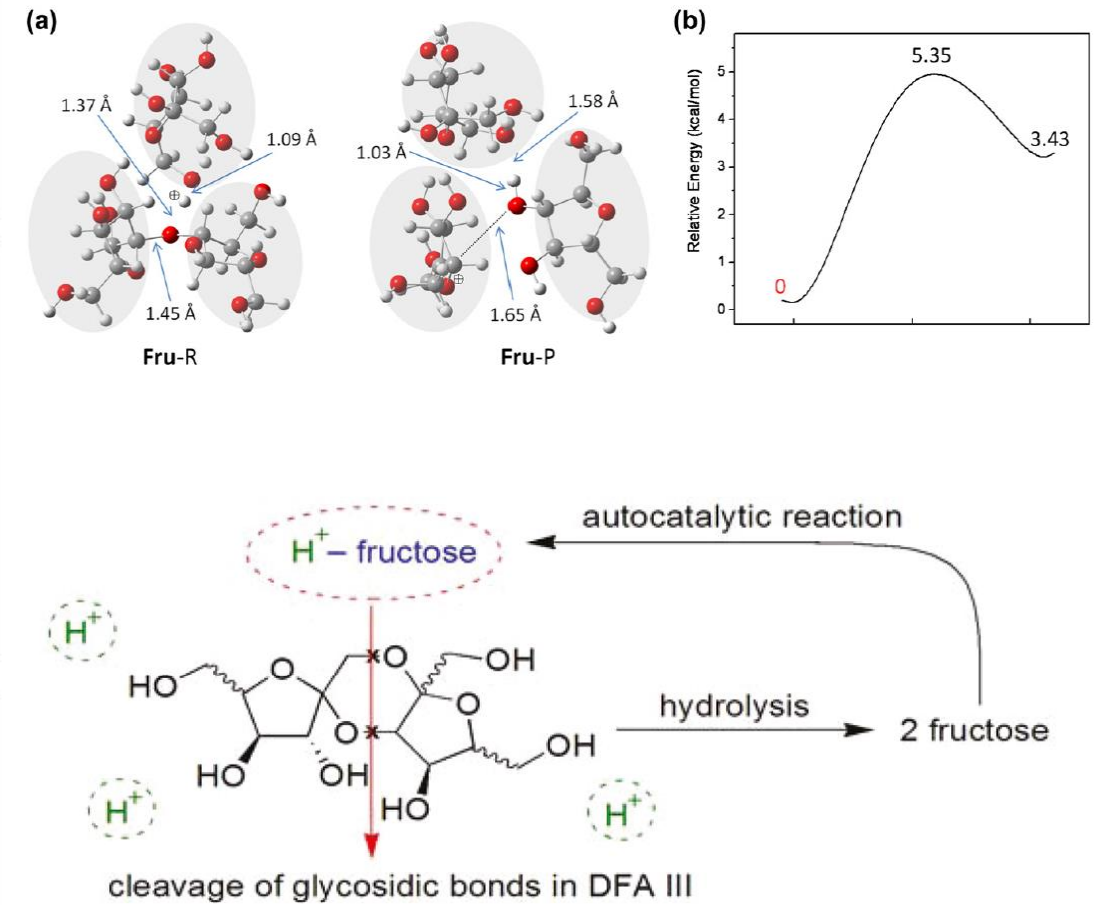
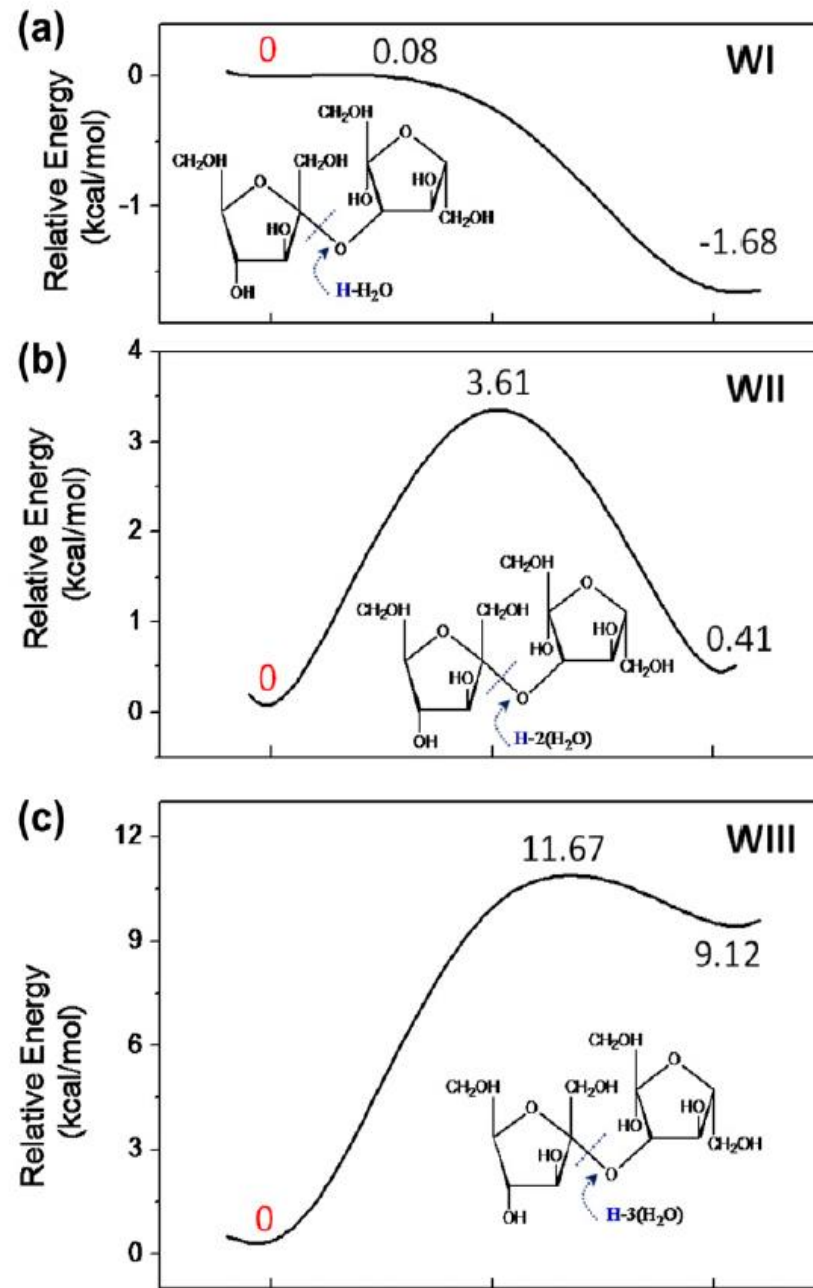
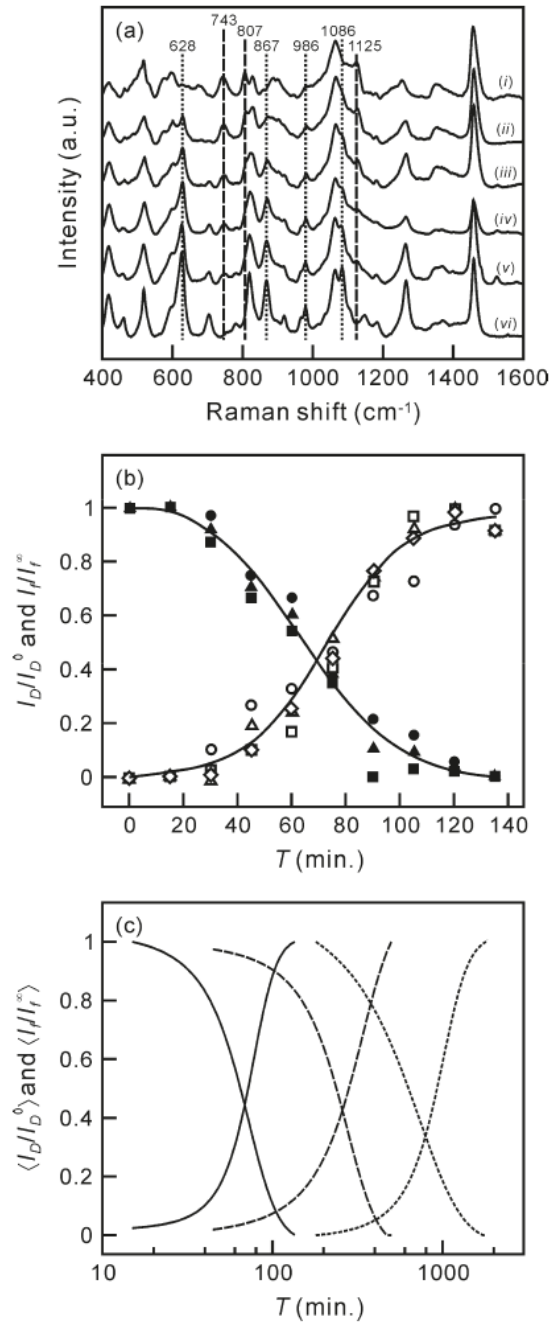


# Analysis Chemical Reactions of Water Splitting



# Study of Autocatalytical Mechanism

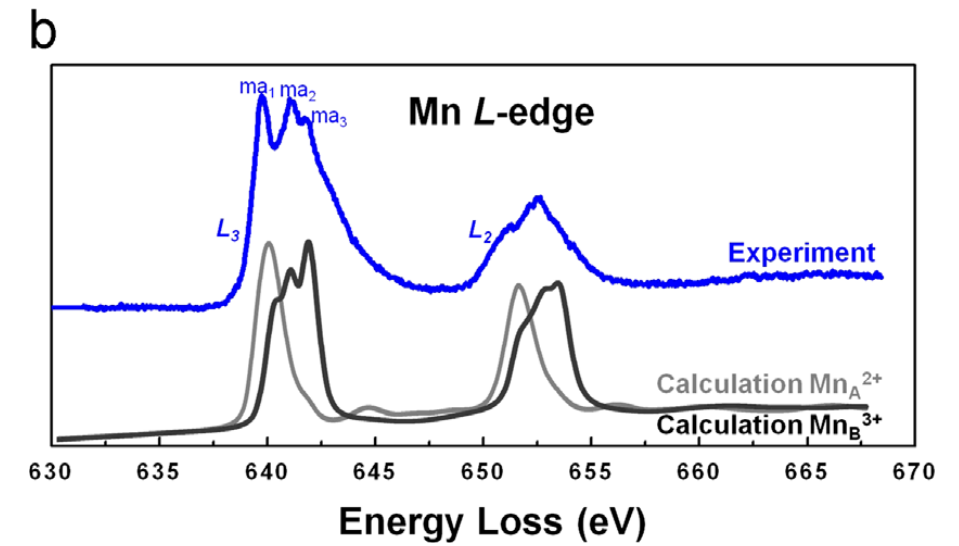
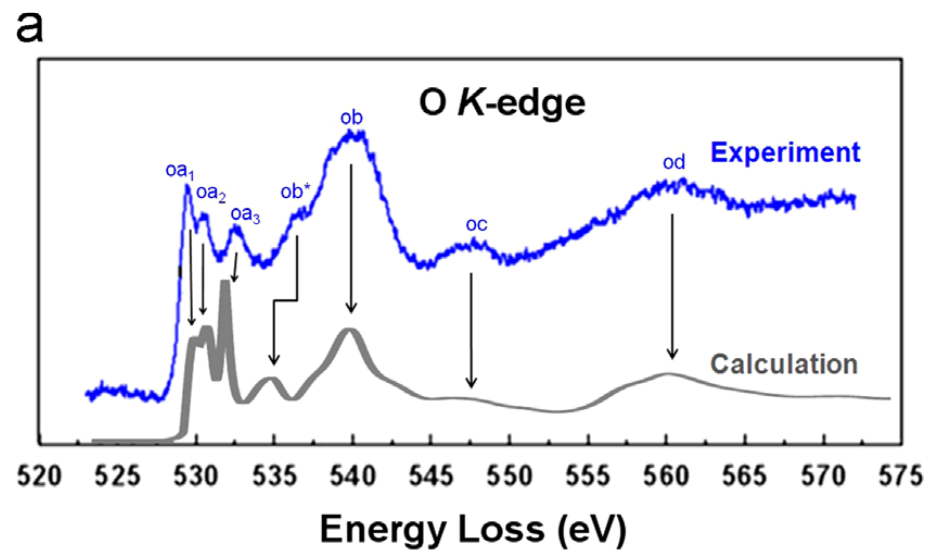
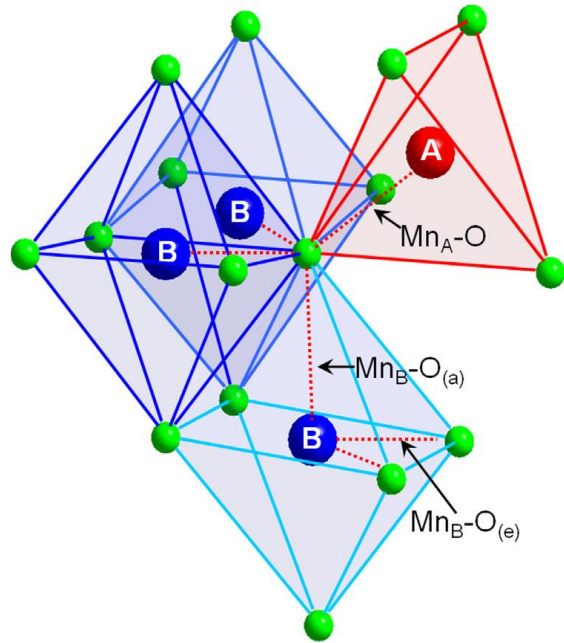


Using theoretical calculations propose plausible mechanism led by proton transfer.

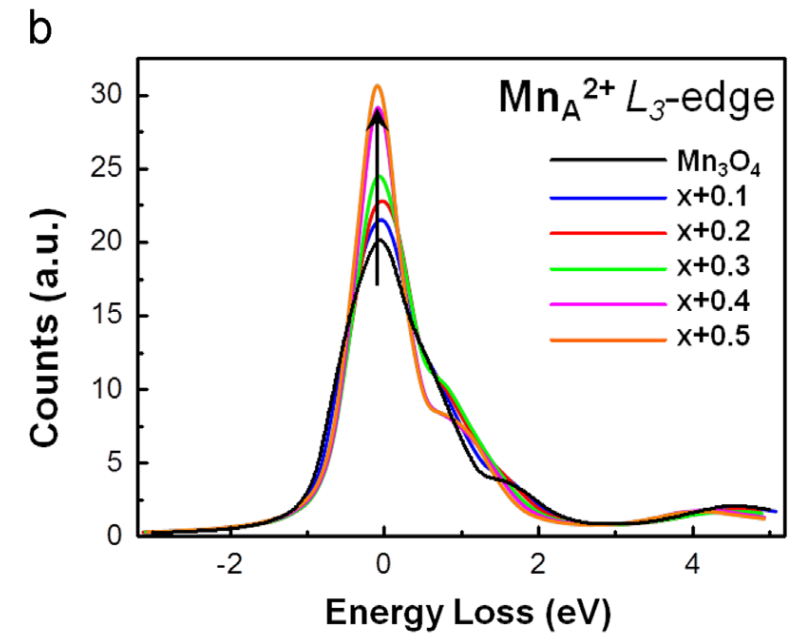
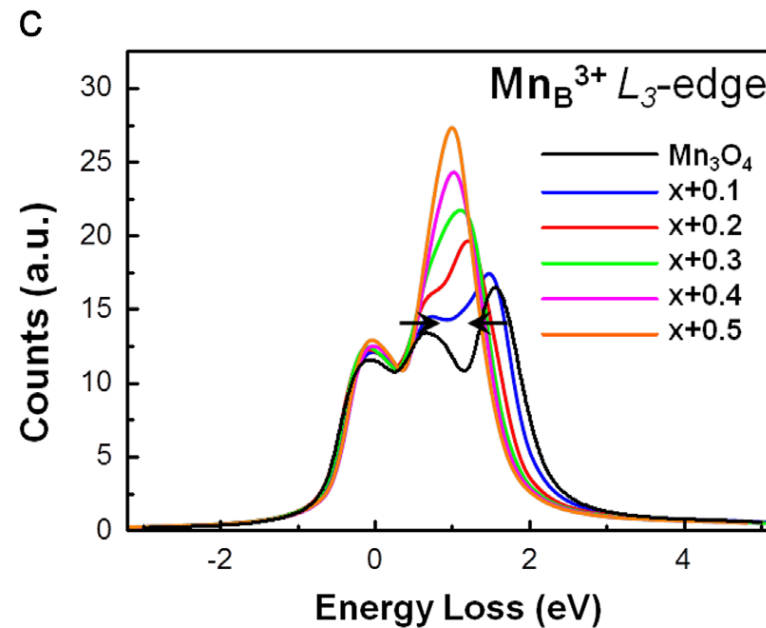
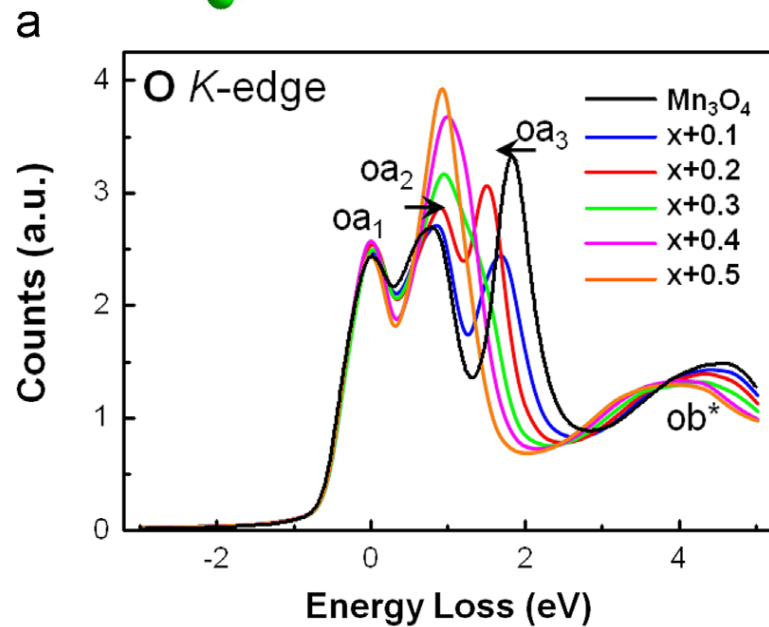
Raman spectrum found autocatalysis phenomena.

# Atomic Scale Local Symmetry Related to XANES

Spinel oxide

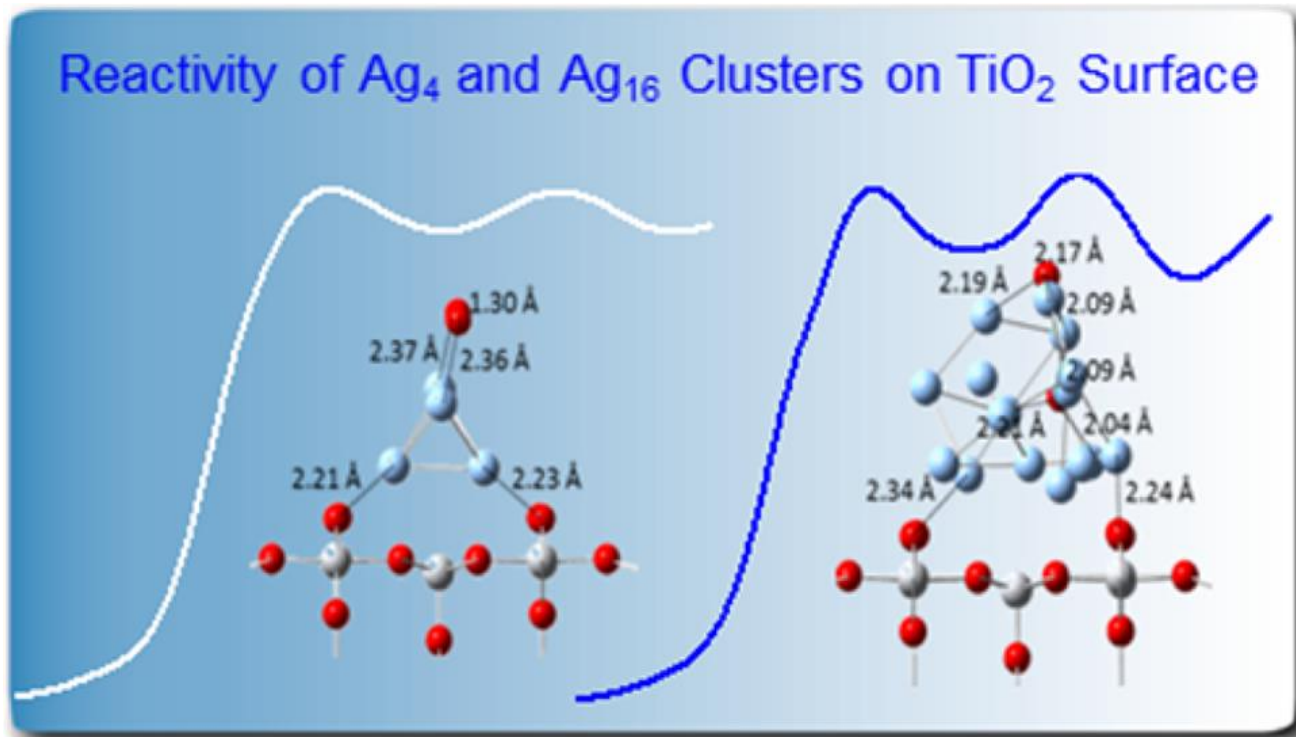
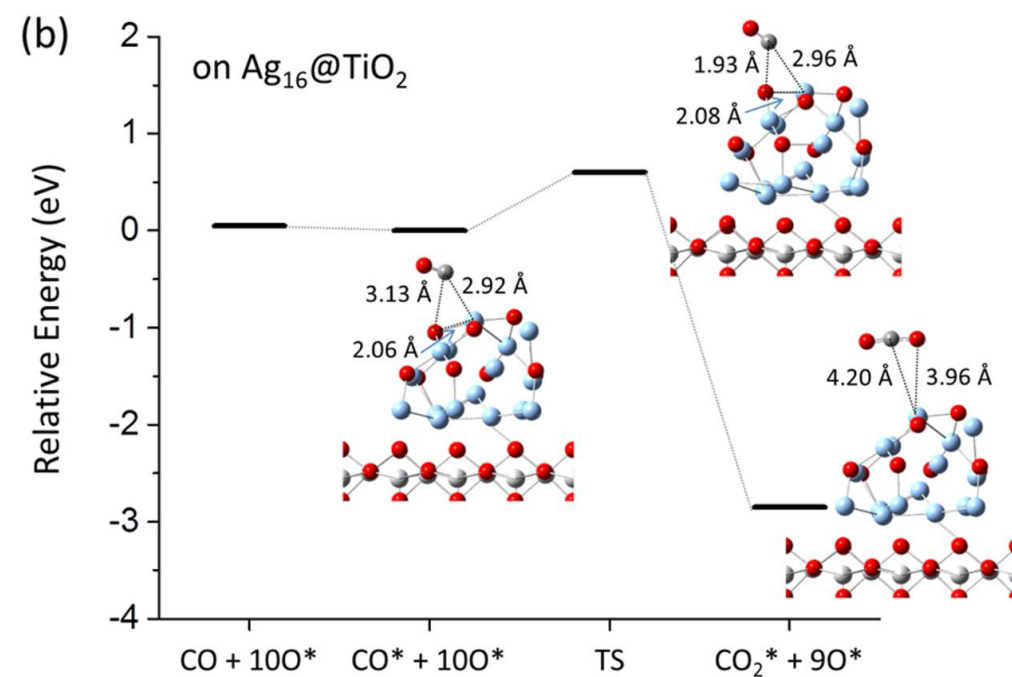
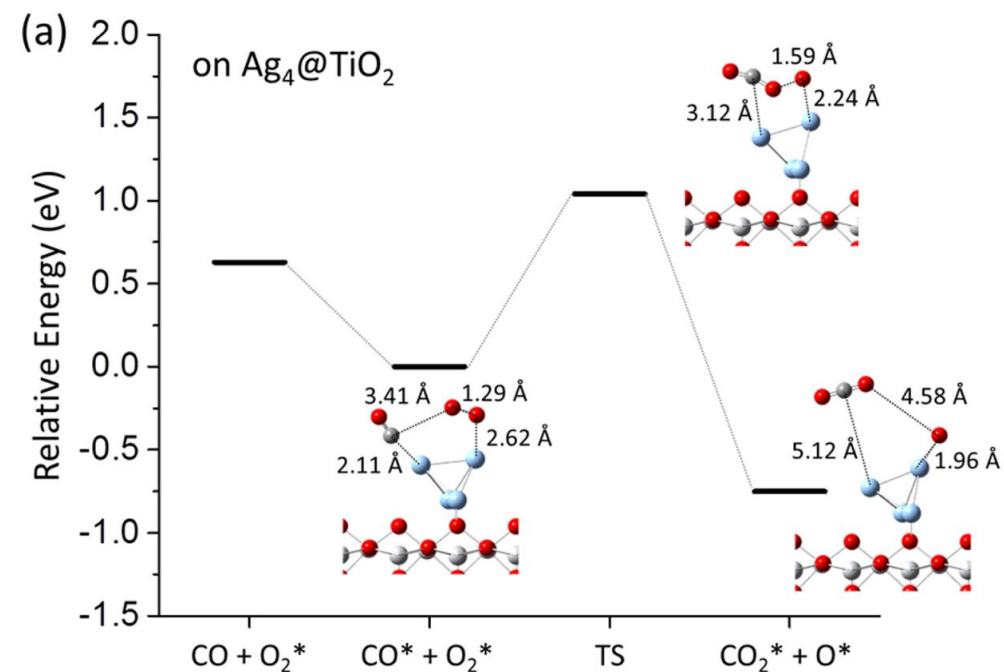
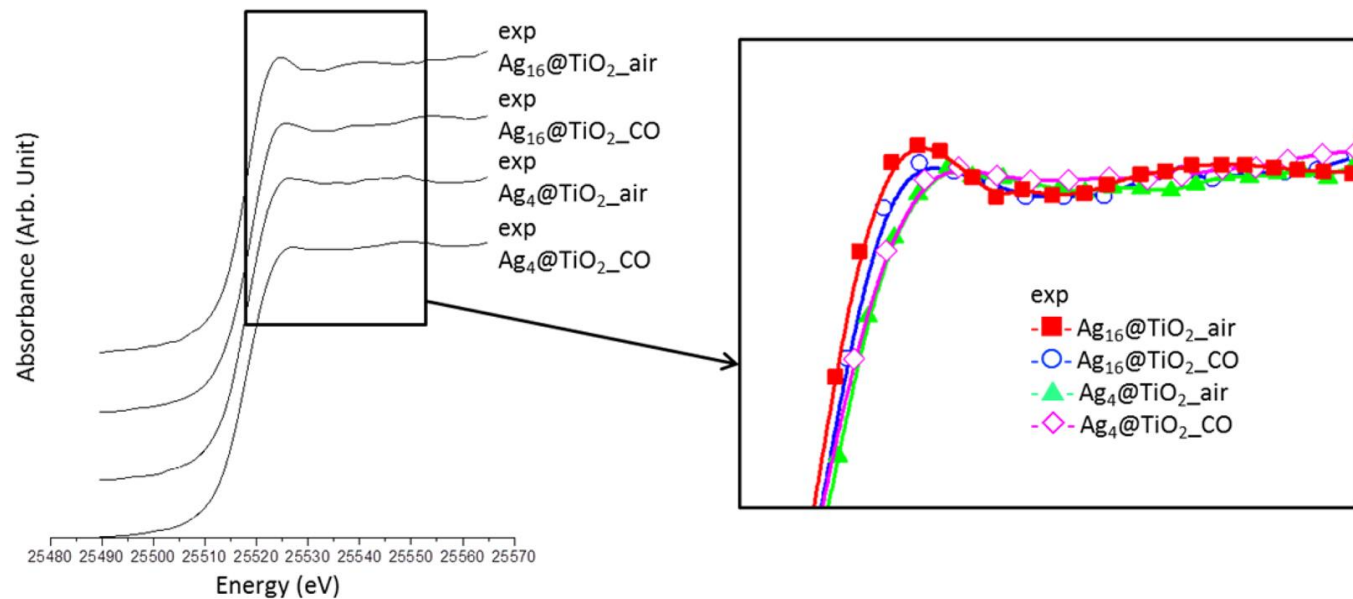


Assign origin of peaks

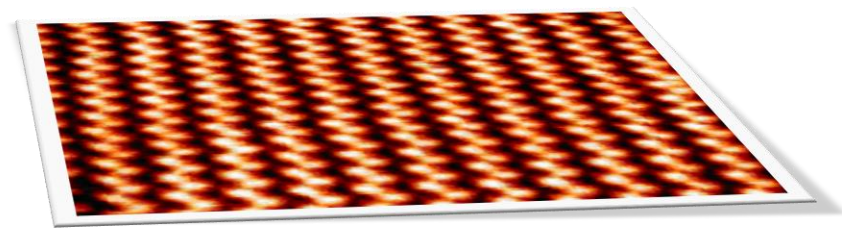


Geometrical variation led to peaks merge.

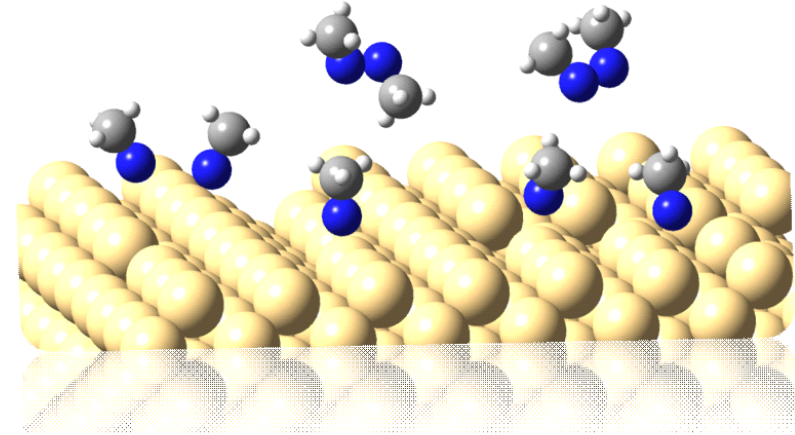
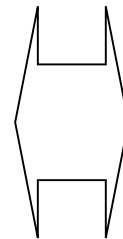
# XANES Investigation of Size-Selective Reactivity



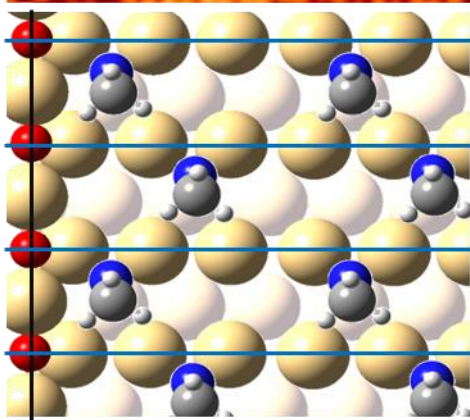
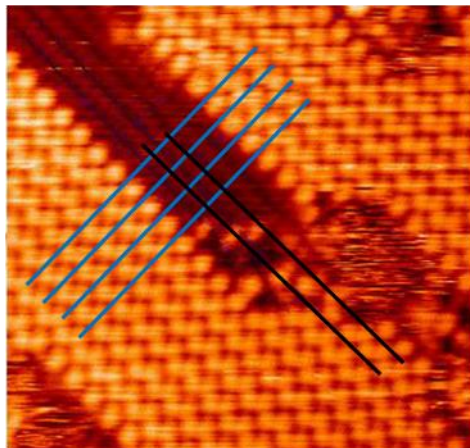
# Geometrical Determination of Adsorbates at Hetero-interface



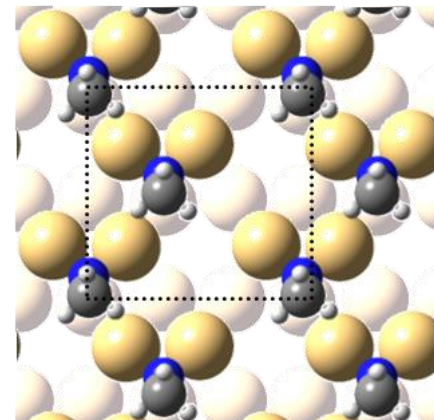
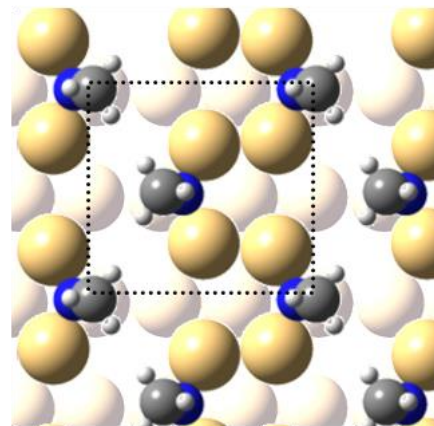
Observed STM image on Cu surface



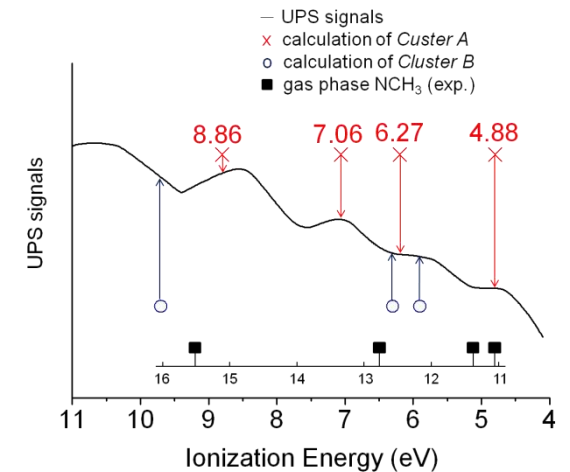
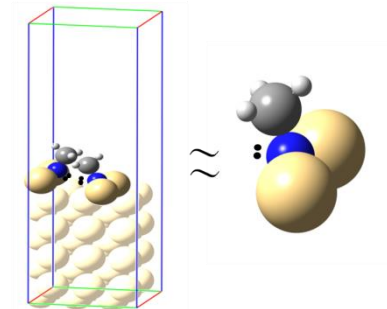
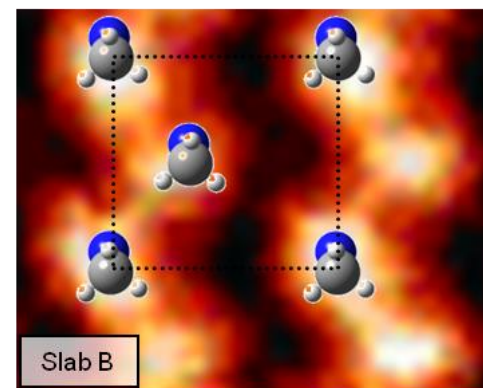
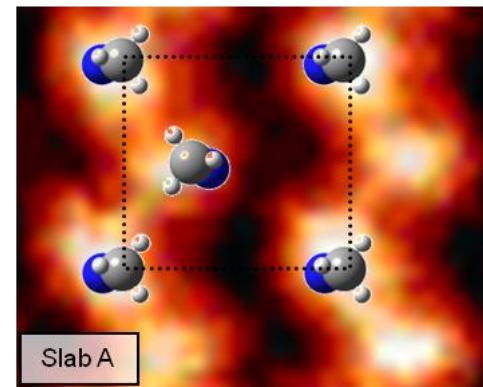
Atomic scale of geometrical structure?



(a) Evidence for adatoms



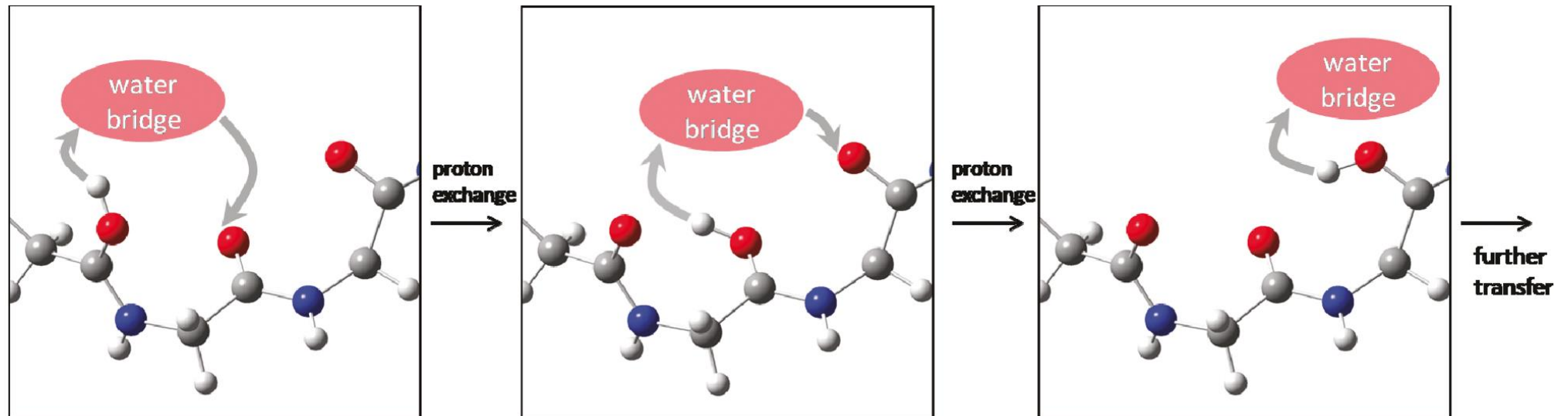
(b) Proposed geometries



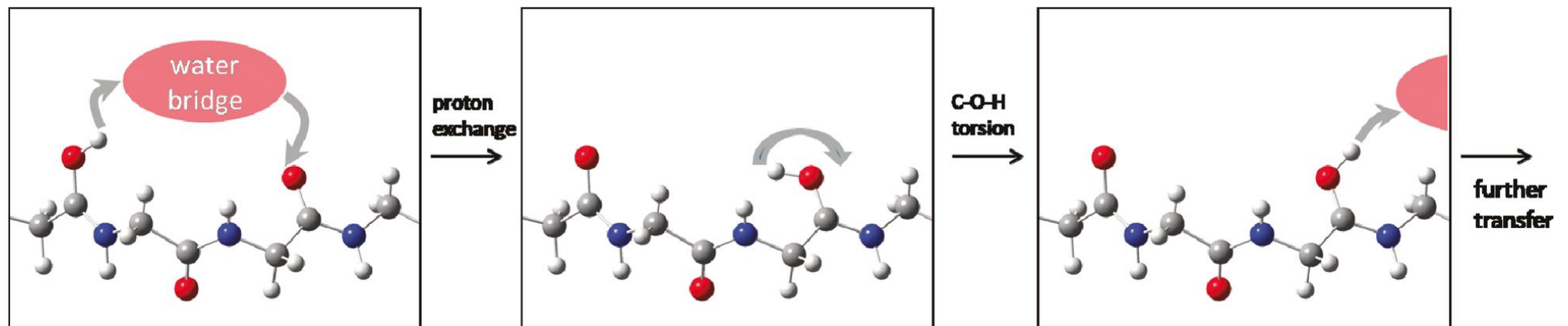
(c) Cluster approach for ionization energy calculation

# Barrierless Proton Transfer within Short Protonated Peptides

(a) continuous mechanism



(b) regional mechanism



During proton-transfer processes, water molecules behave as both the solvent and as “hydrogen bridges”; they give or accept protons to enhance long-range proton transfer.